

MAT-8798US

PATENT

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Application No.: 10/595,081
Applicant: Tomohisa TENRA
Filed: February 1, 2006
Title: VACUUM HEAT INSULATOR, MANUFACTURING METHOD OF THE
SAME, HOT-INSULATION COLD-INSULATION APPARATUS
HAVING THE SAME, AND HEAT INSULATION BOARD
1794
T.C./A.U.:
Examiner: Alexander S. Thomas
Confirmation No.: 2252
Docket No.: MAT-8798US

DECLARATION UNDER 37 C.F.R. § 1.132

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

I am Tomohisa Tenra. I am the inventor of the above-identified application.

My educational background is as follows:

I attended Himeji Institute of Technology and graduated on March 31, 1989. I obtained the degree of College, and studied the field of Chemical Engineering.

My occupation is as follows:

I have worked in Matsushita Electric Industrial Co., Ltd. for 19 years and have performed research and development of insulating materials.

I am familiar with the specification for the above-identified application. I am also familiar with the claims in the above-identified application. In particular, I have read and understood the following features which are common to all claims:

... a temperature at which the glass fibers start to deform due to own weight of the glass fibers; and

a temperature at which the glass fibers become deformable due to a vertical load in pressing and

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sectional shapes of the glass fibers do not significantly vary

I have read and am familiar with the Official Action mailed May 6, 2008 for the above-identified application. That Official Action rejects claims 1-10 as anticipated by or obvious over Jung 2002/0167105 ("Jung"). I have read page 2 of the Official Action mailed May 6, 2008 which states:

Applicant argues that [Jung] discloses a range of temperatures for processing their product and that the instant claims are directed to a specific temperature within this known range that show unexpected results of increased heat resistance and improved insulating performance. However, applicant's alleged showing of unexpected results is not supported by a showing of facts. A proper showing of unexpected results requires that comparisons be made between the instantly claimed products and products made with a processing temperature slightly above and below the instantly claimed temperature as well as at temperatures more than slightly above and below the instantly claimed range.

I have conducted experiments comparing the heat conductivity of vacuum heat insulators with cores made of C-type glass. The cores were molded at different temperatures. The molding time for each core was five minutes.

Below is a table of data showing the experimental results of characteristics of cores and heat conductivity of vacuum heat insulators using the cores:

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Molding Temp. (°C)	Characteristics of core			Heat conductivity (W/mK) of Vacuum heat insulator
	Density (kg/m ³)	Surface Hardness	Handling Property	
440	170	20	Bad	0.0019
450	200	50	Good	0.0020
480	220	51	Good	0.0019
510	230	52	Good	0.0022
520	240	56	Excellent	0.0030

In my opinion, the data show to one of ordinary skill in the art that when the glass fibers are pressured and molded in a temperature range below the distortion point of glass, the cores will exhibit the unexpected result of enhanced insulating property over the cores disclosed in Jung.

Jung discloses molding glass white wool core at a temperature ranging between 400°C (which Jung discloses as 110°C below the strain point for the glass white wool) and 20°C over the strain point of the glass white wool (or 530°C). However, the data above show to those skilled in the art that the narrower range of molding temperatures result in enhanced insulation performance as compared to Jung. That is, molding temperatures at or below 440°C yield cores that are not rigid enough to be handled as a board. Molding temperatures at and above 520°C cause the glass fibers to melt at cross points and yields cores that exhibit increased heat conductivity.

Thus, molding cores in the narrower range shown above results in vacuum heat insulators that exhibit the unexpected result of increased heat resistance and improved insulating performance as compared to the insulators disclosed in Jung.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

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Respectfully submitted,

Date: July 28, 2008

Tomohisa Tenra
TOMOHIISA TENRA

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